

# Gender Identity, the Culture of Organizations, and Women's IT Careers

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## INTRODUCTION

The decreasing number of women in information technology (IT) programs and careers has received increasing attention over the last decade (Arnold & Niederman, 2001; Camp, 1997; Cukier, Shortt, & Devine, 2002; Klawe & Leveson, 1995; Niederman & Mandviwalla, 2004). The proliferation of technology innovations over the last 20 years has made the computer less of a mystery to the general public and placed it in a more prominent place in both the office and home. The integration of networks and the placement of the personal computer as a new artifact in society has signaled both cultural as well as technological changes for the future (Woodfield, 2000). However, bigger transformations are yet to emerge. The future efforts of technology will focus on areas such as artificial intelligence, robotics, and bio-technology and implications are significant. Yet, despite these major changes, organizational cultures across businesses appear to have retained their masculine bias or feel. If the current trend of under representation of women in the IT field continues (Camp, 1997; Klawe & Leveson, 1995; MacInnis & Khanna, 2005), these future developments will be without the influence of women, and IT will become entrenched in the public psyche as a masculine pursuit (Woodfield, 2000).

The purpose of this article is to present an overview of organizational culture and its influence on gendering identities. Further, an exploration of the evolution of organizational culture within the IT discipline will be offered to assist with our understanding of why fewer women are pursuing IT careers.

## ORGANIZATIONAL CULTURE

The concept of *organizational culture* can be traced back to the early 1940s when Kurt Lewin argued that “a factory was much more than a structure of production lines; it was the creation of a group with certain patterns of leadership, and any progressive factory management had to consider “total culture,” which meant all aspects of group life” (Marrow, 1969, p.180). Nonetheless, the concept did not become popular until the 1980s when US businesses, facing sharp competition, looked for explanations of the success of their Japanese competitors (Martin, 2002). The appeal of organizational culture is four-fold: (1) it is linked with organizational success—initially with the competitiveness of Japanese companies (Pascale & Athos, 1981), but later with a range of European and North American companies (Helms Mills, 2003); (2) it takes a multi-layered approach—focusing on the interrelationship between various elements of an organization (e.g., beliefs, symbols, structure, ceremonies) rather than any single element; (3) it goes beyond the purely rational elements (e.g., rules, regulations, systems) to examine the subjective processes and outcomes (e.g., feelings, atmosphere, or climate) of an organization; and (4) it nonetheless appears relatively easy to apply (Davies, 1984).

The ensuing debates around organizational culture over the past three decades have generated several major schools of thought, ranging from those who view organizational culture as a real entity—*something* that can be studied as if it were a concrete entity—to those who view it as a social construct or heuristic for making sense of organizational behaviour and outcomes (Martin, 2002). As we shall see below, feminists tend to take the latter

approach. The debate has also generated over two hundred definitions of organizational culture (Ott, 1989) but they share several things in common, including: (1) a focus on the interrelationship between different levels of an organization, with a tendency to view organizations as mini-societies (Brown, 1998); and (2) a distinction between the manifestations or artifacts (e.g., dress, symbols, language) and the underlying drivers (e.g., values, beliefs) of an organizational culture (Schein, 1992). For the purposes of simplicity, we shall use the term organizational culture to refer to a heuristic or framework that examines *the configuration of beliefs, values, and assumptions that influence organizational practices and associated feelings and emotions.*

## **GENDER IDENTITY AND ORGANIZATIONAL CULTURE**

Feminist organizational scholars have greeted the development of an organizational culture focus with a mixture of interest and bewilderment. Interest stems from the promise of organizational culture to shift attention away from purely technical processes and outcomes to concerns around the socio-psychological impact of organization on the people involved. For feminists, following Oakley's (1972) distinction between "sex" as the physiological features of people and "gender" as the cultural understandings that come to be associated with those features, organizational culture can help us to explore the way that organizations contribute to gendered identities (Gherardi, 1995; Mills, 1998; Morgan, 1988). Bewilderment stems from the fact that gender has largely been ignored by the debate (Wilson, 2001) much as it has been from mainstream organizational analysis (Hearn & Parkin, 1983). In recent years a substantial body of feminist research has examined the impact of organizational culture on gendered outcomes, including discriminatory practices and the social construction of men and women (Helms Mills, 1988, 2002), and developed research strategies and strategies of culture change to deal with discrimination at work (Aaltio & Mills, 2002; Ely, Scully, & Foldy, 2003; Maddock, 1999; Mills, 1998, 2002). Much of this research suggests that organizational culture not only results in discrimination *against*

women but also contributes to discriminatory notions *of* women (and men). For example, where commercial airlines only hire male pilots because of supposed qualities of courage, skill and military experience they are simultaneously creating a masculine identity of piloting and excluding women from that role (Mills & Helms Mills, 2004). Similarly, where commercial airlines restrict flight attending to female applicants based on the notion that the job requires care and attentiveness this serves to reinforce the association between those characteristics and women while excluding men from the position (Cockburn, 1985, 1991). Gender identity, thus, refers to the regular association of certain characteristics with men, and the regular association of certain other (often opposite) characteristics with women. These associations revolve around notions of sexuality and are often assumed to characterize particular types of men (e.g., strong; silent; effeminate) and women (e.g., the girl next door; femme fatale; butch).

## **INFORMATION TECHNOLOGY AND GENDERED IDENTITIES**

On the surface technology may appear to be gender neutral. Certainly types of machines, such as the printing press, the airplane, the lathe, or the computer do not, in their construction, seem to be associated with male or female characteristics. Yet, as various feminist studies have revealed, certain technologies are very much associated with men, including printing (Cockburn, 1991), piloting (Mills, 1998), engineering (Wilson, 2002), and computer programming (Kramarae, 1988). It can be argued that technology refers to a set of machines (e.g., airplanes) and the skills required to operate them (e.g., piloting) and their organization into a system of production (e.g., flight schedules, operating manuals) (Thompson, 1967). The gendering aspects occur at several levels, from the construction of the machine itself (e.g., the computer language), to assumptions about who is capable of operating it and working within a particular system of operations. In each case underlying beliefs, values, and assumptions inform decisions about who is employed in the field, and these underlying dynamics can have far reaching implications for the gendering of the industry. This is no less

so of the older aviation than the newer IT industries. In the next sections we illustrate the importance of organizational culture and gendered identities in women's IT careers.

## **ORGANIZATIONAL CULTURE AND WOMEN'S IT CAREERS**

Information technology (IT) developed predominantly from the discipline of mathematics and has evolved over the last 50 years (Nash, 1990). Akin to the engineering discipline and its interrelationship within organizational cultures (Margolis & Fisher, 2002), IT developed into a male dominated profession with relatively few women in positions at any level of the organization (Truman & Baroudi, 1994). Gendering practices were evident based on the high distribution of males in managerial and analytic roles versus the high distribution of females in administrative support roles. Focal positions within the IT environment included roles such as programmers, architects, and systems analysts, which were chiefly occupied by males (Ahuja, 2002; Truman et al, 1994). Support roles such as system administrators, data entry, and administrative assistances were relegated to females (Ahuja, 2002). Thus, in the early evolution of the IT industry and profession gender discrimination was evident in the exclusion of women from the critical design and development roles, as well as senior leadership positions. These absences continue (MacInnis & Khanna, 2005) and are reflected in much of the language used in reference to computing (e.g., system *crashes*, *hard drive*, etc.) and the people who design them (e.g., geeks).

Work within the realm of IT is frequently perceived as being performed in isolation with little interaction required with other members of the department or the organization (Rola, 2003). This isolation, along with a relative mystique about computing, earned IT professionals the title of "geek", which is further supported by a software gaming culture shared by many within the profession (Klawe, 2001; Menagh, 1998; Palma, 2001). Imagery typically associated with IT geeks reflects a smart but "uncool" person (e.g., taped glasses, bow ties, pocket protectors) (Menagh, 1998). Further, efforts to retain and attract IT professionals in many organizations during the 1990s focused on creating organizational cultures

defined by elements that advanced gender discriminatory practices (e.g., recreational areas with pool tables, basketball courts, and beer on tap, and provided employees with flexibility through causal dress, and bring your dog to work policies). Accompanying this atmosphere emerged a cyber language that transferred machine-like terminology to the human aspects of work, (i.e., the plug and play computer term equating to hiring), the cycle time of machines referring to human resource time available to do a job (Margolis & Fisher, 2002). As a result of these influences, the identity of computer programmers and designers became reinforced as a male profession and masculine pursuit in the development/presentation of the skills required, the symbolism reflecting those skills (e.g., the language, informal dress based on young males), and the associated social activities built around gaming.

While studies have shown an increase in women in IT roles such as system analysts and programmers since the 1970s, the overall results have indicated that the percentage of women in these roles has remained relatively constant (30% or less of the technical workforce in North America and Europe in 1996) (Ahuja, 2002; Richardson, 2004). Further contributing to this gender gap is the decrease in enrollment of women into computer science programs (Camp, 1997; Margolis & Fisher, 2002; Palma, 2001). On the surface concerns expressed by females considering computer science programs include limited number of females in classes, non-female orientated learning environments, perception of the "geek" factor, dissuasions by teachers and guidance counselors, and the gaming culture (Margolis & Fisher, 2002). Despite these dissuasive factors, studies have shown that women find different attractions to computer science and IT professions than their male counterparts. When considering an analytical role such as programming, males are more attracted to the role as it relates to success, creativity, control and problem solving, whereas females are more attracted by success, problem solving, challenge, and math related aspects. These differences point to changes in both university program curriculums and learning environments, and organizational cultures in order to attract and retain women into predominantly male IT roles. In other words, they suggest a need to address the way that IT organizations

develop their organizational cultures to both attract/retain women and men but also to encourage more women to enter the business in the first place.

## CONNECTING WOMEN IN IT

Women respond to male-dominated organizational cultures through a variety of approaches, including the development of female associations or networks (Mills & Murgatroyd, 1991). Within the IT discipline, women have taken advantage of the new information communications technologies (ICT) to develop associations and support networks to reach beyond organizational boundaries and create associations in “cyberspace” (Lahey, 2002). These female-centered formal and informal networks are aimed at encouraging and promoting IT as a profession for women and developing effective networking and mentoring relationships for women across industries and IT interests (Ahuja, 2002). Networks such as GirlGeeks, Anita Borg Institute, Women in Technology International and Women’s Networking Support Programme provide a variety of services such as education about careers in IT, promotion of women through networking and mentoring into new positions and/or companies in IT, and support social implications for future ICT developments.

## CONCLUSION

Organizational culture continues to play a pivotal role in perpetuating gender practices and identity stereotypes within the IT discipline. Simple but profound remedies can be taken throughout IT education and operations to examine and address the extent to which such things as underlying belief systems, values in use, dress, language, symbolism, and processes throughout the industry reflect distinctly masculine or feminine associations. Females will not be drawn into the industry by opportunity alone, as vital as that is, but by feeling or sensing that it is not a narrowly drawn masculine culture (Helms Mills & Mills, 2000).

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## KEY TERMS

**Anita Borg Institute:** An IT professional network for women. Provides a platform for women to express and influence the future of technology. This network is a blend of industry professionals and academics (<http://www.anitaborg.org/>).

**Cyberspace:** A term used to refer to the virtual connection provided through on-line capability on the World Wide Web (www) that provides a platform for communication, information, transaction, and entertainment.

**E-Business:** The process of doing business with either consumers or other businesses through electronic transaction processes and portals.

**Gender Identity:** Refers to the regular association of certain characteristics with men and certain other (often opposite) characteristics with women. These associations revolve around notions of sexuality and are often assumed to characterize particular types of men and women.

**GirlGeeks:** An online communication network for women and girls focused on providing information regarding computing and IT education and careers (<http://www.girlgeeks.org/>).

**ICT:** Information communication technology. The term refers to the proliferation and convergence of computing and telecommunications technologies that network to provide communication capabilities.

**Organizational Culture:** (a heuristic for studying) the configuration of beliefs, values, and assumptions that influence organizational practices and associated feelings and emotions.

**Women in Technology International:** A global women's network focused on providing support and mentorship for women in IT careers (<http://www.witi.com>).

**Women Networking Support Programme:** A global women's network focused on providing support for social change. A platform designed to assist women to influence the future design of information communication technology development and policy. ([http://www.apcwomen.org/eng\\_index.html](http://www.apcwomen.org/eng_index.html))